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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,516	07/08/2003	Christophe Bureau	239939US0CONT	1358
22850	7590	09/08/2006	EXAMINER	
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			LUNDGREN, JEFFREY S	
		ART UNIT	PAPER NUMBER	
			1639	

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/614,516	BUREAU ET AL.
	Examiner	Art Unit
	Jeff Lundgren	1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 24 April 2006.

2a)  This action is FINAL.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-32 is/are pending in the application.  
4a) Of the above claim(s) 25-32 is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-4,7-10 and 12-23 is/are rejected.

7)  Claim(s) 5,6,11 and 24 is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 08 July 2003 is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date *see office action*.  
4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.  
5)  Notice of Informal Patent Application  
6)  Other: \_\_\_\_.

## DETAILED ACTION

### *Election of Invention and Status of Claims*

Applicant's election with traverse of Group I, claims 1-24, in the reply filed on April 24, 2006, is acknowledged. The traversal is on the grounds that there is no evidence that the surface of Group II could be prepared by a different method than that of Group I. Applicants also contend that there is no burden simply because thousands of patents relating to multiple patent subclasses have issued.

This is not found persuasive because, as pointed out in the restriction requirement, this substrate can be prepared chemically. The term "electrografted" in claim 25 bears little patentable weight because it is irrelevant in the final product if the properties of a chemically prepared substrate are the same as the substrate that is electrografted (*i.e.*, similar to a product-by-process claim construction). For example, see Takeuchi, U.S. Patent No. 5,037,504, col. 5, lines 30-40, wherein on a composite surface is formed a polymeric thin film from polymerized monomer of organic molecules on an electrode (*i.e.*, conductive portions).

Regarding the burden, it was clearly set forth in the Restriction Requirement that the inventions are largely divergent, as art that anticipates the substrate is not necessarily relevant to the patentability of an electrografting process for producing composite substrates. It is clear that the Office would be presented with an undue burden to search both of Applicants' inventions in a single application (for example, refer to Takeuchi).

Therefore, the requirement is still deemed proper and is therefore made FINAL.

Accordingly, claims 25-32 are withdrawn as being directed to a non-elected invention, and claims 1-24 are the subject of the Office Action below.

### *Objection to the Drawings*

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the handwritten numerals and/or text are generally illegible and would present difficulty for the public's viewing. For example, the following are noted: the handwritten number "1" is easily confused for a "7" - all text and numbers should be prepared by machine printed fonts for clarity; the term "Molecule" is truncated in Figure 1B; the graphs in Figures 4A-C are too small and are illegible; the text in Figures 6, 7A, 7B, 8A, 8B, 9, 10A, and

10B are not always clear and are poorly placed within the graph; and Figure 12A is not discernable.

Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. *The requirement for corrected drawings will not be held in abeyance.*

#### ***Objection to the Description***

The disclosure is objected to because of the following informalities: Scheme 2 on page 22 is not labeled. Appropriate correction is required.

#### ***Claim Objections***

Claims 5, 6, 11 and 24 are objected to under 37 CFR § 1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiply dependent claim. See MPEP § 608.01(n). Accordingly, these claims have not been further treated on the merits.

Claim 3 is grammatically incorrect and is objected to for omitting the term “or” between the term “solvent,” and the term “Bronsted” in line 5 of the claim.

#### ***Information Disclosure Statement***

The information disclosure statements (IDSs) submitted on October 22, 2003, January 29, 2004, and November 7, 2005, have been considered by the Examiner. The submission is in compliance with the provisions of 37 CFR § 1.97. Enclosed with this Office Action is a return-copy of the Form PTO-1449 with the Examiner’s initials and signature indicating those references that have been considered.

#### ***Claim Rejections - 35 USC § 112, second paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, 7-10 and 12-23 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, and all claims dependent therefrom, are indefinite for reciting the phrase “single step” because it is not clear from either the context of the claim or Applicants’ disclosure what chemistries constitute a “single step.” For example, it is not clear if Applicants claim language is only intended encompass a “holding potential” at a certain voltage, or if the single step encompasses a greater claim breadth, such as a potential scan which jumps at incremental rates.

Claim 2 (and claim 3) is indefinite for reciting the term “consists” as transitional language to describe the composite surface because it excludes certain elements of claim 1. For example, in claim 1, the composite surface comprises “conductive and/or semiconductive portions,” however, in claim 2, the composite surface is limited to only “a paving of materials of different nature.” By definition, a dependent claim must incorporate all of the limitations of the claim from which it depends.

Claims 2 and 3 are indefinite for reciting the phrase “a *paving* of materials of *different nature*” because one of ordinary skill in the art could not determine the metes and bounds of this limitation. First, the term “paving” is neither a term of art as it applies to the relevant invention nor adequately described in Applicants’ disclosure (see page 15). Second, it is not clear what constitutes materials of “different nature”. For example, if two monomers are both members of the vinyl class of compounds, but have different side groups, one of ordinary skill in the art could not determine whether the compounds were of the same nature (*i.e.*, both vinyl) or different nature (*i.e.*, different side groups).

Claim 4 is indefinite for reciting the transition language “is” because it is not clear if the claim language is “open” to other claim elements or is “closed.”

Claim 4 is indefinite for reciting the phrase “for example” because it is not clear to one of ordinary skill in the art how this phrase affects the scope of the claim. It is not clear from the claims or the disclosure how the semiconductive surface should be construed in light of silicon. Claim 14, 19, 20 and 22 (and claims dependent therefrom), are similarly indefinite for reciting the phrase “for example.” Generally, the phrase “for example” renders the claim indefinite

because it is unclear whether the limitations following the phrase are part of the claimed invention. *See MPEP § 2173.05(d).*

Claim 4 is indefinite for reciting the phrase “doped according to a given topology,” because the metes and bounds of this limitation cannot reasonably be determine by one of ordinary skill in the art. This phrase is not contextually clear in view of the claim, does not appear to be art accepted, and is not clearly supported in the description.

Claim 7 is indefinite for reciting the transitional term “consisting” because the term conflicts with the claims from which it depends. For example, the phrase “consists of” in claim 7 excludes limitations of claim 1, and when it depends from claim 2, is not capable of being supported because the substrate of claim 2 consists of a materially different substrate. Correction is required.

Claim 8 is indefinite for reciting the transition language “is” because it is not clear if the claim language is “open” to other claim elements or is “closed.” Further, in claim 2 the claim language of the transitional phrase “consists of” closes off the composite surface to further modification. However, when claim 8 depends from claim 2, the composite surface has a different material composition. Correction is required.

Claim 8 is indefinite for reciting “a conductive or semiconductive surface” because this term is already established in claim 1. It is not clear if Applicants are making reference to the same surface or a new surface.

Claim 12 is indefinite for reciting the phrase “*chosen from* electrograftable molecules and electrocleavable molecules” because the method of claim 1 appears to *require* that the organic molecules be electrically grafted onto the composite surface, but claim 12 defines the molecules to be selected from a molecule that is either electrograftable *or* electrocleavable. This claim language is inconsistent.

Claim 14 is indefinite for reciting the phrase “a group bearing a function that it is desired to give,” because one or ordinary skill in the art would not be able to determine what is “desired” from what is “not desired.” Neither the context of the claims nor the description provide sufficient disclosure that provides reasonable clarity to this phrase.

Claim 14 is indefinite for reciting the phrase “the final polymer” because there is no antecedent basis.

Claim 15 is indefinite for reciting the phrase “whose polymer” because there is no antecedent basis for this phrase.

Regarding claim 15, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. *See* MPEP § 2173.05(d). Claim 19 is similarly indefinite.

Claim 16 is indefinite for reciting the phrase “may be” because it is not clear if this term refers to the possibility that a certain step in the method may be carried out, or if Applicants intend the phrase to be equivalent to “capable of.” Correction is required.

Claim 16 is indefinite for reciting “chosen from 4-vinylpyridine and N-vinyl-pyrrolidone” because it is not clear if Applicants are using Markush language or not. Correction is required.

Claim 17 recites the limitation "said molecule comprising at least one strained ring". There is insufficient antecedent basis for this limitation in the claim.

Claim 18 is indefinite for reciting the transitional term “constitute” because it is not clear from the context of the claim or Applicants’ disclosure if this transitional term is intended to be “open” or “closed”.

Claims 19 and 20 are indefinite for reciting the phrase “particular properties” because one of ordinary skill in the art could not distinguish between organic molecules prior to their grafting that have “particular properties” and those that do not.

Claim 20 is indefinite for use of the term “it” because the term does not particularly point to a specific limitation, and further appears that the term “it” was used twice to describe two different limitations.

Claims 20 and 22 recite the limitation "the locally grafted organic film". There is insufficient antecedent basis for this limitation in the claim.

Claim 21 recites the limitation "the organic film". There is insufficient antecedent basis for this limitation in the claim.

Claim 20 is indefinite for reciting the phrase “at the start” because it is not clear what starting point Applicants are intending to claim.

Claim 21 is indefinite for reciting the phrase “good candidate for lubrication” because this is a relative term and cannot be reasonably discerned by those of skill in the art.

Claim 21 is indefinite for reciting the phrase "which may then be" because it is not clear if this is a positive proactive step in the method that may or may not occur, or if Applicants intend to claim "capable of."

Claim 23 is indefinite for reciting the phrase "scan over said surface" because it appears that this step conflicts with the "single step" of claim 1, *i.e.*, a scan is not a single step, but a series of voltage steps.

The term "preferably" in claims 17 and 23 is a relative term which renders the claim indefinite. The term "preferably" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Regarding claim 23, the word "means" is preceded by the words "of a potential scan" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the words preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967). Further, the specification provides no structure in clear relation for performing any such function of potential scan (*i.e.*, "the means for potential scan are the following structures...[list of structures for performing claimed function and optionally their equivalents]").

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. Substantial corrections are required.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 7, 8, 12, 14, 15 and 18, are rejected under 35 U.S.C. § 102(b) as being anticipated by Guiseppi-Elie, U.S. Patent No. 5,766,934, issued June 16, 1998.

Claim 1 is directed to a process for electrochemically grafting organic molecules onto a composite surface having conductive or semiconductive portions at a potential relative to a reference potential.

Guiseppi-Elie teaches a microfabricated chip, and a process for its preparation, wherein an organic monomer is electrografted to a composite substrate at a electrical potential threshold:

“In accordance with the present invention, a sensor comprising a microfabricated chip comprising at least one interdigitated microsensor electrode array, a first electrode of platinized platinum, and a second reference electrode, said first electrode and second reference electrode being coplanar on the chip with said array, said chip further comprising, an interdigit area that is chemically modified and derivatized to promote adhesion over said interdigitated electrode array, a first layer of electroactive polymer material formed over the interdigit area, and being covalently attached, adhered, and contiguous with the interdigit area of the chip, a second layer of electroactive polymer material, including an inorganic catalyst, formed over said first electroactive polymer layer, and a third layer of electroactive polymer material, including an indicator agent, formed over said second electroactive polymer layer.

“Chemical and biological sensors are provided comprising i) a microfabricated silicon or glass chip possessing a coplanar arrangement of at least one, and typically three, microfabricated interdigitated microsensor electrode arrays each with line and space dimensions that may range from 2-20  $\mu\text{m}$  and is typically 10  $\mu\text{m}$ , a platinized platinum counter electrode of area at least 10 times the area of the interdigitated microsensor electrode array, and a chloridized silver/silver chloride ( $\text{Ag}^0/\text{AgCl}$ ) reference electrode, ii) an interdigit area of the chip that is chemically modified using a functional silane and the silane subsequently derivatized with an electropolymerizable monomer of pyrrole, thiophene or aniline, iii) an electropolymerized layer of highly electrically conducting polypyrrole, polythiophene or polyaniline formed over the interdigit area that is covalently attached, adherent, and fully contiguous over the interdigit area of the chip, iv) a subsequent layer of electropolymerized polymer possessing an inorganic catalyst, v) a third layer of electropolymerized polymer possessing an indicator agent such as an enzyme, or member of a specific binding pair reagent. Reaction of an analyte in a sample with the immobilized indicator reagent changes the electrical conductivity of the polymer layers. The presence of the analyte is indicated by the change in the electrical conductivity and the concentration of the analyte is indicated

by the rate of change and the extent of change of the electrical conductivity of the device.”

Guiseppi-Elie, col. 5, lines 5-47.

In the above quote, Guiseppi-Elie teaches certain other aspects of Applicants' claimed invention: “paving materials of different nature,” as in claim 2; different electronic work function, as in claim 3; the surface may be semiconductive silicon, as in claim 4; the composite surface has two different metals (*i.e.*, silver and platinum), as in claim 7; a preparation step of effecting contact between a surface and a conducting object (*i.e.*, the grafted monomer/polymer to the electrode), as in claim 8; and the organic molecules are electrograftable, as in claim 12.

Guiseppi-Elie teaches certain other aspects of Applicants' claimed invention throughout the disclosure, including: the use of acrylonitrile is part of the electrografted organic molecules (see col. 12, line 12 through col. 13, line 14), as in claims 14 and 15; and the grafting of insulated areas on the substrate (see Figures 1A-C and description thereof), as in claim 18.

Claims 1-3, 7, 14-16, 19, 20, 21 and 23, are rejected under 35 U.S.C. § 102(b) as being anticipated by Charlier *et al.*, *Journal of Electroanalytical Chemistry* 465:200-208 (1999).

Charlier teaches a process for: electrografting organic molecules onto a composite surface (*i.e.*, quartz, titanium and platinum; see Experimental on pages 201-202), as in claim 1; a paving of materials of a different nature (*i.e.*, quartz, titanium, platinum, NVP and MAN – see Experimental) as in claim 2; a semiconductive surface with different parameters, as in claim 3; consists of two different metals (Pt and Ti), as in claim 7; the organic molecules are electrograftable and electrocleavable (see Figure 2 and description thereof); the NVP and MAN meet the limitations of claims 14-16; the organic molecules meet the limitations of claims 19 and 20, and as in claim 21 by using MAN; and meets the limitations of claim 23 (see Figure 3A and description thereof).

### ***Conclusions***

No claim is allowable.

If Applicants should amendment the claims, a complete and responsive reply will clearly identify where support can be found in the disclosure for each amendment. Applicants should point to the page and line numbers of the application corresponding to each amendment, and provide any statements that might help to identify support for the claimed invention (e.g., if the amendment is not supported *in ipsis verbis*, clarification on the record may be helpful). Should Applicants present new claims, Applicants should clearly identify where support can be found in the disclosure.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Jeff Lundgren whose telephone number is 571-272-5541. The Examiner can normally be reached from 7:00 AM to 5:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Peter Paras, can be reached on 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSL

My-Chau Tran  
Patent Examiner

